

ART AS A WAY OF KNOWING

IN SCHOOL SETTINGS

In this session, short presentations about well-established and exemplary practices in school settings (kindergarten through twelfth-grade) sparked small-group discussions about how artistic inquiries can enrich learning experiences, including in institutional contexts challenged by sometimes constrained ways of conceptualizing learning and assessment. What are we learning about art as a way of knowing in the formal educational context, and how can this inform work in the informal context?

Introduced by Bronwyn Bevan, the session included presentations by Madeleine Holzer, Mildred Howard and Lynn Rankin, Steve Seidel, and Stephen Thomas. Nick Michelli served as the discussant.

BEVAN: How is art a way of knowing and doing and being in the world? What do we mean by knowing? We have certain ideas about this at the Exploratorium. Knowing is all about experiencing, seeing, doing, and hearing. But for a lot of people, knowing is being able to say something, to verbally express knowledge acquisition. That's not how we think about it, but that word "knowing" is probably the crux of the problem when people talk past each other, or fail to agree with what they're seeing.

We want to think about art as a way of knowing in the formal context. There is an established and documented history of art integrated into the classroom as a form of knowing. There's also a long, documented, and sad history of failures, thin practice, or the defunding of rich practices. There's a lot we can learn by looking at what has been done when learning was the goal.

This is not a conference about school reform or school curriculum. What can we learn from how schools have traditionally presented art as a way of knowing? How does it apply to the work we do? We don't want to include museums only, but also after-school programs and other forums in which art is introduced.

We will hear presentations by Project Zero, Lincoln Center Institute, the Oxbow School, and the Institute for Inquiry, which is at the Exploratorium. Then Nick Michelli from the Graduate Center at CUNY will circulate around during the discussions to hear what people are saying and engage with them.

Steve Seidel is a Professor of Arts Education at Harvard University, and is the past director of Project Zero, which is based in Boston and is one of the leading research practice organizations in arts education.

SEIDEL: I'm going to talk about three ideas that have floated around, emanated from, and have been themes at Project Zero, which has been around for 45 years as a research organization at the Harvard Graduate School of Education. I've been there for about 23 years. I wandered in and couldn't quite leave because much of the organization's work is compelling.

Goodman understood that learning in, and through, the arts is serious cognitive activity. He wanted to understand that concept more fully, and to make a stronger case that it was not just a frill. It was not a reward at the end of the day for hard, serious work in school. It was in itself serious work.

Project Zero was founded by a philosopher named Nelson Goodman. That's an important piece of information. Goodman had a deep interest in the arts, and felt that learning in, and through, the arts was not in the popular mind in the late 1960s, or at least not very well understood. I think that the argument could be made that it still isn't. Goodman understood that learning in, and through, the arts is serious cognitive activity. He wanted to understand that concept more fully, and to make a stronger case that it was not just a frill. It was not a reward at the end of the day for hard, serious work in school. It was in itself serious work.

The first idea that I'd like to talk about comes directly from Goodman's work. He was interested in the way in which adults and very young children use symbols to represent the world and to communicate ideas about the world. While communicating ideas about the world, both as very young children and as adults, we create our understanding of the world. We use symbolic systems not only to communicate; fundamentally, we use them to understand the world. Goodman believed,

and I think that he was correct, that the capacity to use symbols to communicate, represent, and make sense of the world is also the capacity to make art.

There's an analogy between understanding a language and entering into artistic work and becoming fluent in that realm.

You can think of the various forms of art, artistic domains, disciplines, materials, etc., as languages in and of themselves. Goodman called one of his major works, *The Languages of Art*. There's an analogy between understanding a language and entering into artistic work and becoming fluent in that realm. What does it mean to find and develop the vocabulary, syntax, and various means of expression within a language? What might that mean for young children or anyone new to an art form?

In addition to thinking about what you say, how you hear and how you read is also important. You're learning to become literate in an art form, which is arts literacy. Becoming literate in an art form is a major part of what we should be trying to accomplish for children in K-12 school settings. There are many interesting examples of this. One that I have studied is educational programming at Shakespeare & Co. in western Massachusetts. It was very clear that quite young, elementary-age people, as well as middle school and high school students, could achieve a very high level of literacy with Shakespeare in a relatively reasonable amount of time; it doesn't require 27 years.

Another idea is to think about arts as ways of knowing. They interconnect but remain slightly separate. We've been trying to understand artistic processes as learning processes. There are variations in artistic processes. Many of them combine composition, rehearsal, and/or practice. Practice can mean the practice of skills, capacities, etc., but also rehearsing, which is essential when preparing for a performance. Performance is a separate process, involving critique, reflection, and improvisation.

Depending on the art form, highly skilled, experienced teachers will move from one form or process to another. What guides them? They'll say to their students, "We've been improvising enough. Let's go back to the script, or the text, or the score," or "We've been rehearsing enough. We have to perform now," or "We need to step back and reflect." The consciousness that guides the teacher to say that it's time to move from one form to another is a consciousness that is guided by a deep sense of what kind of learning is optimal, along with the possibilities, and also the limits of learning inherent in each of those processes. You can't become accomplished or skilled in an art form if you're engaged in only one of those processes.

Those processes have rich possibilities, but also limitations and distinctions. Learning the distinctions is very important. Also, the arts are central to creating.

Sadly, we need to assert this as legitimate. It wasn't until 2009 that Harvard issued a radical report from the president's task force on the arts, which claimed that making something constitutes a way of knowing, and that within the context of Harvard, it might be reasonable to give academic credit for it. Currently, that is not what happens.

In the context of the K-12 information-distribution model, a relatively narrow skill-building model, the hands are completely irrelevant parts of the learning experience, emotions are rarely actively engaged, and the senses are assaulted in negative ways. The concept of arts as a way of knowing allows the mind and heart to have embodied knowledge. It imparts legitimacy and power.

BEVAN: Madeleine Holzer is the Educational Development Director at Lincoln Center Institute in New York. She will talk about the Institute's program and the set of capacities that it has developed, which are relevant to art as a way of knowing.

HOLZER: Lincoln Center Institute has been in existence for 35 years. We are located at Lincoln Center for the Performing Arts in New York City, and we were founded by Mark Schubart. Like Project Zero, LCI has a philosophical base. Our base comes from a man you've heard a lot about this morning, John Dewey; from a combination of two of Dewey's works: *Art as Experience*, which you've heard a lot about, and *Experience and Education*. We believe, as Dewey did, that not all experiences are educative. Making, as a way of knowing, is a good thing, but not all making is an educative experience. An educative experience is one that leads to further inquiry, curiosity, more curiosity, and more inquiry.

“We are interested in education here, not in schooling. We are interested in openings and unexplored possibilities, not in the predictable or quantifiable, not in what is thought of as social control. For us, education signifies an initiation into new ways of seeing, hearing, feeling, and moving. It signifies the nurture of a special kind of reflection and expression, a reaching out for meaning, a learning to learn.”

The other person who has been extremely influential at the Institute is Maxine Greene. Maxine has been the Institute's philosopher-in-residence for its whole history. She's now 92 years old and still lecturing. To quote Maxine, “We are interested in education here, not in schooling. We are interested in openings and unexplored possibilities, not in the predictable or quantifiable, not in what is thought of

as social control. For us, education signifies an initiation into new ways of seeing, hearing, feeling, and moving. It signifies the nurture of a special kind of reflection and expression, a reaching out for meaning, a learning to learn.”

Our core concern is aesthetic education. Steve was talking about the arts, art-making, and the doing of art. The Institute is not concerned with the teaching of art skills. We’re not concerned with the teaching of artworks as exemplars for the teaching of skills. What we are interested in is the teaching of skills, the explorations of skills as a way of honing perception. So we turn typical arts education on its head. The students who work with us explore various forms of art-making in dance, music, visual arts, and theater as preparation for an experience with a work of art in those disciplines, and also literature in the form of picture books. They also explore reflection, and inquiry about their experience with a work of art.

We’re in 70 schools in the New York metropolitan area. We also work with teacher education programs in eight colleges; they incorporate this work into their teacher preparation courses. We also present workshops nationally and internationally.

One of the things that we’ve realized over the years, which certain people in this room know well, is that we did not articulate exactly what we thought students could learn. We realized that we were putting ourselves at a huge disadvantage, especially in schools. If we couldn’t talk about what students learned, why were we there? If you can’t articulate what students learn, you become a frill. You marginalize the arts.

It’s not that scientists don’t live with ambiguity, but artists wallow in it.

After looking at our then 30 years of experience in forming a small, new high school in New York where we were the lead partner, we learned what we called Capacities for Aesthetic Learning. As we started to use the Capacities, we realized after talking with teachers that they were interested in cultivating imagination. Science teachers said, “I can use these when I’m talking about teaching science.” The social studies teachers said, “These are really important when my kids are looking at primary sources.” The mathematics teachers said, “When kids are terrified about solving an equation, if I can get them to look at it and tell me what they see, and ask questions about it, and make connections to other things, it makes it a whole lot easier for them.” The language arts teachers said, “This is a piece of cake. We’re going to teach literature as a work of art.” If you teach literature as a work of art instead of as something to be dissected, you come up with something very different.

Lincoln Center Institute Capacities for Aesthetic Learning graph



The thing that's different about these capacities is that they come from the study of works of art. As such, they introduce dimensions that are not in other disciplines, except in literature, if you look at literature as artworks, which I do, as a poet. For instance, the factors in these capacities that are not in the scientific method are embodying, exhibiting empathy, and living with ambiguity. It's not that scientists don't live with ambiguity, but artists wallow in it. We found that teachers across all disciplines are interested in these capacities because they have students who are kinesthetic learners. If these students can embody what

they're doing, and can use manipulatives (first-hand¹ learning or hands-on learning, which is what we do in the arts), it becomes easier for them to learn. Exhibiting empathy is critically important in the arts after you enter into the shoes of somebody who's giving a performance. You don't necessarily talk about that in the sciences or mathematics, but it's critically important for moving into a civil society.

Capacities have been introduced into our in-depth schools, which we call our focus schools. There are nine of them in New York City. Teachers are working to incorporate the capacities into other school inquiry projects. We also work with a school reform organization in New York City, New Visions for Public Schools, to develop new charter high schools. Whether you like them or not, charter schools are here to stay, and New Visions for Public Schools, which has developed 99 small high schools within New York City, is now in the process of developing up to 18 charter schools for underserved kids in the city. We are the lead partner in the schools, and they are using the Capacities for Imaginative Learning.

Ron Chaluisan, who's the vice-president of New Visions, calls Capacities for Imaginative Learning "the discreet elements by which students can achieve the Common Core Standards." I had never thought of that. When I wrote the Capacities, that is not what I was thinking. But that is, in fact, the way that they are being used in these schools, and the teachers and the curriculum developers who are working on this are very excited about the possibilities. Common Core Standards require high-level skills. They're very complex tasks that kids have to achieve. The Capacities are ways into them. They're more grounded for kids who look at a problem and say, "I can't do it." The Capacities provide these students with a toolkit. They provide a way for students to begin, to scaffold their learning, to understand what they're doing.

The other interesting thing that's happening is NASA—not the National Association of State Arts Agencies (NASAA)—but the fly-up-into-the-stratosphere NASA, which has approached the Institute about using the Capacities for challenges that

¹ The term "first-hand" was mentioned by Bronwyn earlier in the day.

they're developing for high school students. That's really interesting. They've already posted challenges on the Internet that students use (usually students in wealthy districts with teachers who are savvy). NASA's interested in creating challenges that can be scaffolded, because they want all kids to be interested in the sciences. That's their goal. Our goal is to get kids to think imaginatively and aesthetically. A long time ago, I said to Steve Seidel, "Aesthetic education applies only to the arts." I've come around. I now think that aesthetic education and imaginative learning, as we look at them at the Institute, are very much involved in how people experience the world, no matter what it is that they're doing. We're excited about doing this with NASA.

We're not against accountability. We are against the kind of standardized tests that box students in and prevent them from thinking imaginatively, or about the arts. We must be held accountable by the schools for what kids learn. The Capacities begin to articulate this. They may morph over time. Many of you are in informal settings and don't have to worry about tests the way we do. But articulating what students learn helps to bring students or older participants into your organizations. It motivates them to attend exhibits; it gets them to think in scientific and aesthetic ways.

BEVAN: Stephen Thomas is the founding director of The Oxbow School, which is an incredible school in Northern California.

THOMAS: Oxbow is a semester program. Kids come for one semester from all over the country, half of them from private schools and half from public. The school is centered on studio visual arts, but we teach everything through the lens of art—English, science, and history—all through the lens of art. There are some key ingredients that make this work.

We designed our lesson plans so that different kinds of learners could access them, and then reflect their learning back to us in various ways.

The school is a combination of ideas, and some of the best work that Project Zero did was key to our curricular design. I had the good fortune to study with Maxine Green back in the mid-90s, and she exposed me to Howard Gardner. At Oxbow, we created a project-based curriculum that has multiple points of entry. We designed our lesson plans so that different kinds of learners could access them, and then reflect their learning back to us in various ways. We think that this has been a very successful approach. David Perkins, also from Project Zero, was a key influence. He believes that giving students real problems in school facilitates retention; they learn more deeply and carry the knowledge forward in their lives.

Our goal was to give students an immersive experience. It's a boarding school experience, as students come from all over the country. Because they're not all from the neighborhood school, they look around and wonder, "Who is this? What is that?" A lot of assumptions go out the window. We have just sixteen weeks to deliver a transformative experience, and we have found that compression/intensification is key to making it happen.

What are the tools that students need to move forward productively in an ever-changing environment? What's in the toolkit that enables our students to take control of their lives?

Nel Noddings was also a visiting lecturer during my year of study in New York. I was influenced by her ideas as to the ethics of caring in school environments, and how the pressures of test-based assessment have driven that out. High schools in this country are inhumane in every way, so we set out to change that. At Oxbow, art-making and academic topics are interwoven, so that the experience of research, writing, and making art becomes an internalized working model for students, and an internalized model for personal growth. That's one of Dewey's beliefs, and we referred to it again and again in planning the curriculum. What are the tools that students need to move forward productively in an ever-changing environment? What's in the toolkit that enables our students to take control of their lives?



Oxbow student during landscape perception exercise

That's been our story. We're in our twelfth year now, and some of our grads have begun their careers. They're not all in the arts; they're in social policy, they're in science, they're going to med school, they're being forensic scientists. We believe that the skills we taught have provided leverage for their future—that they leave us empowered for whatever they choose to do. We try to create a set of surroundings, buildings, people, and curriculum, which enables student experiences that lead to growth. For example, we teach everything in the art studios so that the students can't separate English, math, and art. Everything happens in the same place, because we want them to understand that depth in any area will lead to valid connections in other disciplines. We show them how to do research across domains, because one of the skills that we want to impart is an ability to take information and models from one domain and apply them in another.

We are mission-driven in that every decision about the school is considered through the lens of student experience. That makes it easy for us to stay on target with what we're trying to do. We employ a meta-cognitive approach that we have

found to be most appropriate for this age group. It's a little bit like an extended rite of passage, and it's the extension that's important. They're living away from home, and they're doing something very difficult without the support of friends or family. They walk away empowered because they realize, "I did that for myself, and now I can do it in the world."

We talk about helping students identify things in the microcosm, while at the same time, we're introducing things in the macrocosm, the external world, so that they can make a bridge. Now they have a true way of understanding an external event, because they have identified a similar or parallel event in their own life or community. We use the macro-to-micro model all the time. When I say meta-cognitive, I mean that we tell them what we're doing, so we demolish the idea that there is a sub-agenda. There isn't any sub- or invisible agenda at Oxbow.

We emphasize, not genius, but hard work and talent; not waiting for inspiration, but having a question and knowing how to solve it. We teach them that making art is a way to understand their own lives and the validity of lived experience. Artmaking is a way of making sense of the world around them.



Oxbow student at work in Painting Studio

We emphasize, not genius, but hard work and talent; not waiting for inspiration, but having a question and knowing how to solve it. We teach them that making art is a way to understand their own lives and the validity of lived experience. Artmaking is a way of making sense of the world around them. We give the high-school group, which has been in the same K-8 community with the same group of peers, a chance to reinvent themselves. Their history does not come with them; they can be who they need to be, and many kids will be a different person every week of the semester until they recognize who they want to be.

We believe in the heuristic model of teaching. You've heard this again and again: learning by doing. We use every kind of modality in our classroom. I want to talk about Nel Noddings and the challenge to create caring in schools—to teach about human relationships in schools. We see teaching as co-learning. As a faculty, we try to model the same kind of collaborative skills and habits of mind that we want our students to acquire—caring instead of testing. The same eight adults teach, lead sports, meet with advisees, and perform nightly and weekend studio supervision.

We see more of each student in our short time with them than their families and teachers typically do. We see them, and they see us in all of our moods and attitudes.

We start the day with a poem. They live in a small, college-like environment, and we use a collegiate approach to the schedule. We have two, daily, deep-engagement classes for two and a half hours that do not include lectures. The students spend their time doing things. They're in various modes—working in small groups, doing research, and conducting interviews—taking in information and processing it.

All of our students write in their journals, keeping track of their thinking. They develop their own monologue about their work, and they do this in their academic, as well as their studio arts courses. At the end of each art project, they turn in the work along with their journal about the work. In this way we learn about their intentions. What were they trying to communicate? It's not always obvious in the work, whether that work is a poem or an art artifact. We also use a variety of critique formats: artist-led, audience-led, and faculty-led, which are always supportive. What were the artist's intentions? Did he or she achieve them?

I mentioned that the curriculum is project-based learning and that we emphasize artistic inquiry. Teaching artistic inquiry is a variation on the scientific method. I also mentioned depth over breadth, and we have some meta approaches that are good entry points for the examination of many topics. We use the same grading criteria across domains, whether it's humanities or studio arts. Students are always asking, "What is my practice of critical inquiry? How good am I at doing research? How did I manage my time and prioritize tasks? What is the degree of finish in my work? Did I document my process well in my journal?" In presentation, performance, work ethic, and studio habits, students assess their academic and studio arts classes with the same criteria. We try to impart a set of skills for the objective evaluation of their performance, and we have found that the continuity and coherence of the elements are successful.

The 16 weeks culminate in a month-long art/research project. All the classes are finished, and each student has identified an essential question. They're doing research, writing papers, and creating a body of artwork around their topic that will culminate in a final show. They move furniture, paint walls, install the show, and then present their work before an audience on that final weekend. Initially, we didn't think that we would have enough time in 16 weeks to see real change. We thought that we might be able to plant some seeds, which would bloom when they got home. Instead, we see amazing transformations in the course of a semester. We have more than 900 graduates, and the alumni's loyalty is far beyond what we'd hoped for. I still get calls from parents who say, "What did you do to my kid? She's addicted to learning."

BEVAN: It's striking that people have been talking about broad notions of learning and development, and how the processes and capacities involved in engaging with the arts are intrinsic to how we think about development and learning.

I'm going to introduce Lynn Rankin and Millie Howard. Lynn is the Director of the Exploratorium's Institute for Inquiry, and Mildred was an artist in the Institute for many years. They interviewed me 20 years ago, and made the decision to hire me based on the shirt that I was wearing. Both will discuss work that they did some years ago when they were working with people who assumed that they would be involved with science. Instead, they experienced science in a form that is usually reserved for art.

“Art is included, not just to make things look pretty, but because artists make different kinds of discoveries about nature than do physicists or biologists. Both artists and scientists help us notice and appreciate things that we have learned to ignore or had never been taught to see.”

RANKIN: Since its inception, both artists and scientists have built Exploratorium exhibits. Frank Oppenheimer, the museum's founder, recognized the importance of art and the perception of natural phenomena. He said, “Art is included, not just to make things look pretty, but because artists make different kinds of discoveries about nature than do physicists or biologists. Both artists and scientists help us notice and appreciate things that we have learned to ignore or had never been taught to see.”

At the school in the Exploratorium, which is now called the Institute for Inquiry, we embraced this philosophy. When we started working with artists, we worked side-by-side. We would invite artists to present a session that was complementary to the work that we were doing. If we were doing something on sound, we'd do it in our classroom, and then the teachers would rotate and have a session with the artists. It wasn't until we had this breakthrough that we realized that to live Frank's remarks, we had work alongside artists and collaborate with them.

At that point we invited artists to join our staff. Courtesy of the National Endowment for the Arts and the California Arts Council, we had a lot of funding in those early years with which we established an artists-in-residence program. Artists would stay for a couple of years to work with us. Several artist coordinators also joined our staff. Mildred was one of them. It was one of the richest experiences that I've ever had, both professionally and personally. The rest of us were either science educators or scientists. It taught all of us a different way of seeing the world, and a different way of thinking about teaching and learning.

The collaboration with artists was within the context of our professional development program, which is working with elementary school teachers. They came to learn hands-on science. Usually it was held for two weeks in the Summer Institute. We would investigate a topic such as light or color. We would work alongside the artists, playing together, and we'd ask ourselves, "What does it mean to understand the phenomena of light and color from both the scientific and the artistic perspective?" We'd explore color-mixing, light, pigment, reflection, refraction, and shadows.

Then we'd ask ourselves, "What are important questions that we should ask ourselves about phenomena?" and "What kinds of experiences should we provide teachers that will help them to understand the phenomena of light and color, in the same way that we now do?" During the school year, our science educators and artists would work with teachers in their classrooms to create public installations that instantiated the work that had happened in the classrooms. Mildred and I will give you a glimpse of what that looked like.

One of the most important things that happened during this messing around was the development of an intuition about how the phenomena worked. Alongside that intuition was the notion of helping, of cultivating teachers who became keen observers of the world, who looked at things closely enough to ask questions. They saw things in a different way.

The exhibits at the Exploratorium were our playground. If we were exploring light and color, there were probably 30 exhibits that the teachers could mess around with—exhibits that enabled them to play, to engage, and to develop their curiosity. One of the most important things that happened during this messing around was the development of an intuition about how the phenomena worked. Alongside that intuition was the notion of helping, of cultivating teachers who became keen observers of the world, who looked at things closely enough to ask questions. They saw things in a different way.

There was a lot of back-and-forth, which raised questions and engaged curiosity. Then we'd go into the classroom, where teachers could deepen their interest in the phenomena, and broaden their knowledge by further exploring light and color. Through that keen observation, they noticed things that they'd never seen before. Red, green, and blue light combine to make cyan, yellow, and magenta. That's a new experience for most adults. From that kind of experience, more questions were generated. Over a period of time, teachers began comparing the interaction of light and pigment and asking, "What is the interaction between light and pigment?"



Institute
for Inquiry
experiments
with mirrors
as inspired by
artist Robert
Smithson's Mirror
Displacements



We had been studying shadows in the classroom and grappling with how to help teachers understand that light and shadow have dimension, and that both exist in space. That is a difficult concept to understand. The artists thought that we should immerse teachers in an experience where shadows had personal resonance. Setting up the shadow panels was a serendipitous moment. I don't think that the artists intended this to happen, but that's the nature of this kind of work. Several teachers began to notice that the shadow existed on the ground.

They were able to develop a visceral understanding of light traveling and of shadow having dimension. It was one of those things that came out of the ether, and yet it didn't. We had spent so much time playing and collaborating together that those kinds of experiences just developed.

HOWARD: Teachers, artists, and the students collaborated on public installations. The artists went into the classroom to help teachers who had been at the institute. They worked with the students, using play, the manipulation of materials, ideas, questions, and different ways of thinking.

For first and second grade, we developed a series of pieces in Marin County and also at the De Young Museum. You see these pinwheels, and you notice that the colors mix as they spin. We also have color myths. Students developed myths based on color. As the time of day changed, and as the seasons changed, the myths got longer or shorter. The light of the day influenced how vividly they would shine.

The first graders' interpretation was more a collage of how color works. It was almost literal, because we use round light sources. They drew what they saw, and then layered one thing atop another. We used a series of installations that showed light passing through, colored shadows, reflection, refraction, and so on. We also worked with teachers to develop their conceptual way of thinking. We went to the Headlands Center for the Arts and worked with Robert Smithson's ideas about mirror displacement. We devised interesting ways of bringing art to the environment. What is most profound is not knowing whether it was art, science, or both. Did it even matter? I like David Ireland's quote, "You can't make art by making art."

BEVAN: We thought that it would be important to talk about how art is a way of knowing. That's what we spent the day talking about. We've just seen four instantiations of what it might look like in different contexts. You're here because you have experience with this question. We're asking you to share your thinking.

What are your experiences with art as a way of knowing in particular settings or programs? This is moving, perhaps from the theoretical to the practical, to ground the conversations. We're interested in the notion of what barriers to use, given the constraints imposed by schools. Yet there are robust programs. We're thinking of moving into non-school settings, which have fewer constraints, although maybe there would be different kinds of barriers.

That's something that we struggle with. Part of the rationale for this conference is that the National Science Foundation, when they received proposals from the informal science sector about integrating the arts, didn't know how to respond. It was confusing to people from the informal science world. They didn't understand how people would learn through the arts. There are barriers even in the informal sector, and we're interested in discussing them. Tomorrow we will look at ways of noticing, capturing, and perhaps assessing learning in and through the arts. We will have video, photographs, and other forms of data. When you think about education, striving is always important.

We'll have 45 minutes for discussion. At the end, Nick will synthesize the session. Feel free to tell us what you think is important. Fan Kong, who works with us at the Exploratorium in the Center for Informal Learning in Schools, will capture those ideas for the report that we're issuing, which is critical.

BEVAN: Nick Michelli is a distinguished professor at the Graduate Center at CUNY. Nick will discuss some ideas that you heard, and he will provide a synthesis.

MICHELLI: I heard some profoundly interesting comments all around the room, which are worth recording and following up on. One issue focused, not on what “art as a way of knowing” means, but on what it looks like in practice. How can we get parents to think about art as an important way to talk to children beyond schools? One group said, “It’s the tests. We have tests. Forget about it.” Another group said, “If we use rubrics and learn how to scaffold, we have to have output at some point.” Somebody else said, “We should take videos of kids and look at the kinds of questions that they ask. Are they asking different questions, better questions?” Another group discussed the importance of reflection. How important it is to reflect if you’re using anything as a way of knowing? Somebody else said, “You can’t do this in public schools, as there are too many risks, such as high-stakes testing, ranking features by value-adding measures, and ranking schools. Principals are hysterical. We have to get out of the public schools and work with charter schools.”

I heard from several people, “What do we do about the policy-makers who maybe define our lives?” We’re living in a world where competition and evaluation are dominant. Somebody gave an example of all the television programs, the reality shows. Everybody’s competing with everybody. That’s all you see. They’re making a trip around the world. They’re losing weight. You name it.

FEMALE VOICE: It’s also based on elimination.

MICHELLI: Elimination. It’s based on elimination, right.

FEMALE VOICE: Humiliation.

MICHELLI: We didn’t talk today about the brain and neuroscience. What does it mean to have multiple ways of learning? Maybe we should follow artists and ask them why. If they’re not recording, maybe we can find a way to do that. Ask them, “You made a decision. Why did you do that?” I assume that they will be able to answer.

Those were wonderful. There were at least two-thirds other discussions that I couldn’t possibly have heard. You’ll get a chance to raise some of them. I think that there are critical questions that we’ve begun to answer. We got even more out of this group than we did all week long. One of the questions was, “What is knowing? What does knowing mean?” Those are important questions. Another question was, “Are there different ways of knowing? What do they look like?” All of these are essentially contested concepts, which means that 30 people will give 30 answers.

It takes longer than a day to reach consensus.

If we're asking kids to find ways of knowing, we're asking them to construct reality based on a set of guidelines, a set of principles.

We started with the question, "What is art?" That is an important issue. I thought about what it means to see art as a way of knowing, and about Phillip Phoenix, going back to the '60s and '70s. I thought about Charles Brenner. I thought about Joseph Schwab—when people were saying that one of the critical differences across school disciplines is the way that practitioners in those disciplines come to know something. How do they engage in knowing? It may not be similar for art. There are more commonalities perhaps, but how does a scientist know? And how is that different from what a historian does to know, or an art critic does to know? What do you know? What does it mean to know? These questions get to the issue of what is reality. We're saying that it's socially constructed, and that it's not something that we're going to discover. If we're asking kids to find ways of knowing, we're asking them to construct reality based on a set of guidelines, a set of principles.

This contradicts current conditions in American education. I've never seen it worse. I use this issue to have my students say, "I used to believe...and now I believe..." I used to believe that someday I'd be in the majority. Now I know that I never will be. I have to accept that, because we're at a point where the most basic question of all has to be raised, and that question is, "Why do we educate in a democracy? What is education for?" If somebody from Mars visited Earth, they'd say that education exists to have people pass somebody else's tests. So I use a much broader conception about education as enhancing life, about learning to live in a democratic society, about knowledge, and thinking critically about knowledge, and a whole wealth of things that are not easy to measure. I know that we're all concerned about how to measure this.

Art as a way of knowing requires getting into the public domain if we're going to rescue kids in public schools. Several of us come from New York City, where 50% of the kids don't graduate, which quadruples the incarceration rate. Welfare is likely. Poor health is likely.

Albert Shanker, who was the AFT president, said, "What matters is what we measure." He didn't say, "We measure what matters." He said, "What matters is what we measure." We have to change that mindset if we're going to position arts as a

way of knowing, or move arts into a predominant position. We measure literacy, and we measure mathematics, and everything else is superfluous. Einstein said, “Not everything that we measure matters. And not everything that matters can be measured.” That is not where we are in society.

Art as a way of knowing requires getting into the public domain if we’re going to rescue kids in public schools. Several of us come from New York City, where 50% of the kids don’t graduate, which quadruples the incarceration rate. Welfare is likely. Poor health is likely. Don’t you think that if we taught art as a way of knowing, we might be able to improve the student experience? Somebody said that 80% of kids in New York City receive no instruction in art whatsoever. I think it’s probably true.

BEVAN: Thanks, Nick. Do you want to respond to Nick’s ideas?

MALE VOICE: We were talking at this table about these characteristics. I am a science educator, and I believe that if you were going to do good inquiry at an elementary level, you would be integrating multiple ways of learning. Some are called habits of mind, some are called values. Unfortunately, elementary teachers don’t do this. They skip over a lot of this and jump immediately to data gathering and questions, and they don’t spend a lot of time exploring. A lot of curricula is designed this way, too, to discourage open-ended questions.

I think that inquiry could be done in a developmental sequence. I would emphasize noticing, embodying, empathizing, and then starting to question, and making connections. This approach could be conceptualized in a developmental sequence.

THOMAS: One of the things that I try to instill in the kids who come to my programs is the need to refrain from the work that they would turn in for a school assignment, and doing the work that they do on their own at home. The work that they do at home is about their minds and their interests. When we ask them to do that, their conversations have a reality and an awareness of what’s important to their life, their values, the things that they care about. It’s a classroom of respect and empathy. We all learn. We’re going to see very different things, but we’re all learning about those things. Those things become the values of the group. When the group has a set of values at that scale, the kind of growth that’s possible is amazing. It comes from being able to share experiences and have them validated. It’s different from workbook exercises and whatever else.

BEVAN: Lucena, were you going to say something?

FEMALE VOICE: From working with Mike, Karen, and some of the PIE projects in the school, which are amazing, we’ve learned the value of students working

collaboratively. These are real-world experiences. The students are incredibly engaged, and they're learning. They are more deeply engaged than I've seen previously. Their thinking becomes not an art; it becomes a holistic experience. The terminology disappears, and it's a phenomenologically based experience.

MALE VOICE: I'll apologize for this table, because we dismissed the question.

BEVAN: That's fine. So what question did you have?

I concluded that what makes a high-quality experience is whether the learners are there by choice or by assignment.

MALE VOICE: I will try to grapple with it in the last minute here. I was working on a study about what constitutes how people in the field think about the arts-learning experiences. I was repeatedly asked by the funders, "What difference does it make whether it is theater or the visual arts, etc.?" I concluded that what makes a high-quality experience is whether the learners are there by choice or by assignment. Is it mandatory or voluntary? Mandatory settings usually involve matters that are not immediately or intrinsically interesting to the learner. If you get art-inclined kids or science-inclined kids, you're teaching them things that they would choose to learn anyway. However, if you can figure out in a mandatory setting how to get people engaged in things that they're not initially interested in, you've really cracked the code. That contributes an enormous amount to the larger conversation about formal and informal schooling.

BEVAN: Do you think that arts may be one way to do that, to engage people who might not otherwise be engaged?

MALE VOICE: That's too broad a conclusion. The problem is that there are people who don't like the arts, who are intimidated by the arts, who resent the elitism of the arts, who think that the art world excludes them, that it holds power over them—all kinds of things make people legitimately resistant to engaging. Dick Hawthorne wrote some years ago about establishing a setting in which kids could exhibit either approach or avoidance behaviors. These approaches would then be examined to learn what the students are attracted to.

BEVAN: I want to thank the presenters. I thought it came together beautifully. Thanks also to everybody for coming and engaging in conversation together.